



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

# BOTANICAL GAZETTE.

---

VOL. X.

JULY, 1885.

NO. 7.

---

## An Autobiography and Some Reminiscences of the Late August Fendler. II.

EDITED BY WM. M. CANBY.

Let us now give, by extracts from his letters, a fuller account of his life in Venezuela. In a letter written to Dr. Gray, in December, 1854, he says: "On my arrival \* \* \* \* (at Colonia Tovar), I found a chance to buy a small farm, with the produce that was on it and a small cottage, for \$47." One can not help wishing for more definite information regarding the size of the "farm," the amount of produce, and the style of cottage, all of which could be purchased for \$47! And the place seems like a veritable Garden of Eden, when farther on he discourses thus: "A visitor who never before lived in a valley like this, finds here many peculiarities of vegetation, surface and climate, which make him feel that he is not far off the land of perpetual peace; for he has entered the happy region of the ferns, the 'tierra templada de los helechos.' There is no scorching summer's heat, no fearful winter's cold, neither tornadoes to devastate the country, nor gales to blind the inhabitants with sand or dust, or penetrate their clothes and flesh with piercing frost. Lightnings are rare and rather harmless, thunders merely grumbling. \* \* \* \* The mean temperature of April was 63.3°; May, 63.9°; June, 63°; July, 62.4°; August, 63.62°; September, 63.5°; October, 63.44°; November, 62.52°. Very seldom the temperature gets as low as 50°, and yet more rarely it rises to 78°. These two degrees (50 and 78 F.), seem to be the limits which are never exceeded in these months. The common temperature ranges between 56° and 70°. I am told that in January and February the temperature may be a few degrees lower in the morning, but otherwise about the same as in all the other months. The temperature of this valley therefore is that of a perpetual spring. Yet there is some variety in the climate with regard to moisture, viz.: the dry and rainy seasons. \* \* \* \* In the dry season if there is at any time moisture enough in the atmosphere to be condensed the mountainous districts are sure to get it. The judicious farmer is therefore enabled to plant and reap at any time the whole year round, for if the rain should fail abundance of spring water, which rushes and leaps down from all sides in numerous rivulets to every man's field, can be made to restore moisture to the soil. In fact, my brother, who is with me, plants small patches of potatoes once every fortnight, month after month. \* \* \* \* My cottage stands on a small hill which is projecting from the sloping side of a mountain overlooking the greater part of the colony. On the slopes of this little hill we have made terraces, planted with *Musa sapientum*, with apple trees, palms (*Conocarpus utilis*) and a stately tree fern fourteen feet high. Near the brown polished stem of the palm the

clear arch of a fountain glitters in the tropical sun, sending up unceasingly its sparkling little stream to the top of the young palm." He then speaks of having already collected about 255 species of ferns as well as other plants. "The fine dry weather, which is now approaching, urges me again to renewed activity in the field. The woods here are very dense, and impenetrable without a sabre. The neighboring country is much diversified. In two or three hours' walk I can be in a region where the tropical fruits in all their luxuriance grow, while the products of the colony are rye, barley, oats, wheat, potatoes, beans, flaxseed, etc. The apple tree here is more shrub than tree-like, blossoms at all times of the year, and bears apples without seeds. \* \* \* \* The finest strawberries can be gathered a few steps from my door in great abundance during eight months of the year; blackberries are equally abundant. Of palms I have collected six species, of which five grow in the colony; tree ferns nine or ten species. Cruciferae and Umbelliferae are represented only by two or three species."

In a letter to Dr. Gray, under date of Nov. 25, 1855, he informs him that he had already collected 314 species of ferns, "of which at least 290 were collected at the colony, or from four to eight miles around it." He had also collected 1,850 species of flowering plants, and thought he might get 800 or 1,000 more of these, and perhaps eighty or a hundred more of ferns.

Late in 1855 or early in 1856 he returned to this country. About May 1 of the latter year he again sailed for Venezuela, and by July of 1857 had increased his fern numbers to 489 and of flowering plants to 541. He busied himself also with Fungi for Dr. Curtis, Lichens for Prof. Tuckerman, and Mosses for Mr. Sullivant. He speaks of there being heavy white frosts in the high mountain regions, "and yet the stately wax palm on the neighboring heights, with its polished shaft of seventy or eighty feet, rears uninjured its slender form and its leaf-adorned head high above all other trees." Two statements taken from his journal will complete the extracts from his Venezuelan correspondence.

"In traveling from Victoria towards Valencia we find, about three miles west of Turmero, right in the middle of the road, the famous 'Zamang,' an enormous tree so well described by Alexander von Humboldt. Its head, formed by enormous horizontal branches, is the most remarkable part of this giant of trees. \* \* \* I measured its head in its greatest diameter \* \* \* most carefully, and found it to be 206 feet 11 inches English. Fifty-seven years ago it was found by Humboldt to measure in its greatest diameter 192 feet French measure, which would be equal to 204.48 feet English. Hence it follows that this tree, within the last fifty-seven years, has increased the horizontal diameter of its head only by 2 feet 5 inches English. The branches are loaded with a wonderful mass of epiphytes and parasites, and it seems surprising that branches of nearly one hundred feet in length, standing horizontally out from the trunk, can support for centuries, besides their own astonishing weight, such an extra load of heavy plants as Bromeliaceae, Orchideae, Cactae, Loranthaceae, Piperaceae, etc." The next relates to the celebrated "Cow-trees." "The space over which they were distributed was but very limited. \* \* \* Their external appearance, the shape of the trunk and leaves, agree exactly with the description given by A. von Humboldt. Most of them were trees of 1 to 1½ feet in diameter, but very tall. In seven or eight of these trees, of different age and dimensions, I made incisions to see the milk flow. Although it was about the same season of the year when Humboldt saw the cow-tree between Valencia and Puerto Carbello, I never could elicit from them more than one or two drops in a second of time. There was not much difference in the flow of milk between the larger and smaller trees, and if ever I was disappointed in my expectation, it certainly was on this occasion as to the quantity of the milk. The milk has an agreeable, mild, rather rich taste,

and becomes somewhat sticky between the fingers. People who live not far off, and have tried these cow-trees, do not praise much their milk-yielding qualities. I have neither seen the fruit nor the flower of these trees, but in comparing its leaves with those of plants in my herbarium I find the closest resemblance in shape, structure and venation with some species of fig trees. The wood is white and of considerable hardness.\*

Fendler returned to this country and settled again at St. Louis sometime in 1858. It is not necessary to recount his various occupations between this date and the time of his removal to Wilmington.

About the year 1873 the writer received a note from the late Dr. Engelmann, giving information that Fendler had settled at Seaford, Delaware, and requesting that some attention should be paid to him. After a short correspondence with the writer he determined to remove to Wilmington in the same State, where he purchased a small house and garden. In the latter he and his brother (who required some care) took great delight. At this time Fendler was about 60 years of age, rather tall and spare, dignified and pleasant in address, but very modest and often painfully diffident. The writer frequently took botanical excursions with him, and found him to be a devoted lover of nature and a most intelligent and faithful assistant in preparing and arranging specimens for the herbarium. The enthusiasm with which he spoke of the wonderful and curious vegetation of the tropics will always be remembered by those who heard him; and his long and arduous journeys gave him much matter for entertaining conversation.

He was scrupulously honest and exact in every duty and business transaction, and it is within the writer's knowledge that he at one time suffered what his friends thought a most unjust loss, because of his determination to avoid a quarrel with any one.

He was now much engaged in getting ready for publication his "Mechanism of the Universe," in which he had given his ideas of cosmical phenomena. Nothing would persuade him that this book was not to bring him lasting fame, and no reasoning could discourage him from undertaking the expense of publication. All that could be done was to save him as much as possible. The expense proved to be comparatively small, but, in this respect, was much more than matched by the small sale of the work. The few commendatory letters which he received were treasured and re-read with the greatest pleasure by the gentle and guileless man.

As he says in his autobiography, it had been his intention to make Wilmington his permanent home; but a year or two after he settled there he was attacked by some rheumatic ailments, which not only caused the most acute suffering, but at one time seemed likely to end his career. Finally, when he had somewhat regained his health, he determined to seek a warmer climate, choosing, after some deliberation, the island of Trinidad. He and his brother sailed from New York on the 11th of May, 1877, and arrived at Port of Spain on the 3d day of June following. In a short time he bought a little property at Belmont, a suburb of this city, and at once commenced to plant the ground and otherwise improve his new home. He was more than ever delighted with the tropical flora, and thus wrote his impressions: "The gardens of some of the wealthy men here are of a splendor which, with regard to magnificence of vegetation, excels everything I have seen. Such beauty in form, such gorgeous colors portended out among such an abundance of racemes, bunches, and scattered masses of flowers, is indescribable. \* \* \* All efforts of the most able

---

\*The "Cow-tree" (Palo de Vaca of the Spaniards) was described by Humboldt, Bonpland and Kunth as a genus under the name of *Galactodendron* utile. It is now considered as identical with the older genus *Brosimum* of Swartz, of which Bentham and Hooker recognize eight species, all tropical American trees with lactescent sap. As Fendler suspected they are nearly allied to the fig trees (*Ficus*), but it is possible, as his trees were such "poor milkers," that some species have a smaller flow of the milky sap than others.

writer can not but fail to give the reader an adequate conception of the brilliancy of such garden scenery and of the astonishing luxuriance of vegetation. Men and their habitations sink into insignificance beside the enormous trunks and heads of giant trees, and the busy town itself, looked at from the neighboring hills, lies hidden beneath their branches. \* \* \* Bananas and mangoes are plenty, and sell two for one cent. The mango, which when ripe is a delicious fruit, will be in its perfection in about a week, and will then sell much cheaper."

Again, in a letter to Dr. Gray, he writes: "Here, also, as in North America, June seems to be the month of flowers, at least as regards the cultivated ornamental shrubs and trees in Port of Spain. At present Poinsettia takes the lead, and shows off in great splendor. Think of specimens of this beautiful shrub 15 feet high, head 10 to 15 feet in diameter, with such an abundance of crimson leaves (4 to 7 inches long) as to hide nearly all the green leaves. The season for mangoes came to a close about the first of August, to be succeeded by what is here called 'Governor's Plums.' Next came the season for bread-fruit, ending about the 24th of October, and now we are entering the season for oranges."

Very soon he commenced collecting specimens for the herbarium, the ferns, as usual, being the first to demand attention. Within five miles of his residence he found, within a few weeks, "about 70 species." His aim was to make 50 sets for sale, and in the course of two months he had prepared more than 2,800 specimens. Those botanists who are so fortunate as to have these specimens can well allow his claim, that "as regards completeness, freshness of color and expression of characteristics" they were "all that could reasonably be desired and expected." As a demand arose he collected many specimens of mosses, lichens and phanerogamous plants.

---

## Notes on the Conjugation of *Spirogyra*.

BY JOE N. ROSE.

During nearly two years study of the various species of *Spirogyra*, conducted in the botanical laboratory of Wabash College, my attention was repeatedly drawn to exceptional features in their conjugation. At Professor Coulter's request I have collected my notes upon this subject and figured the more striking cases. In explanation of the accompanying plate it should be said that it is entirely diagrammatic, with a view of bringing out the salient points, although most of the original drawings were made with a camera. This text is intended to be little more than an explanation of the figures, and but little interpretation of the facts is attempted.

*Figure 1.* In this case (*Sp. longata*) a single well matured zygo-spore fills most of the larger (*a*) and part of the smaller (*b*) cell. No evidence of conjugation other than through the partition between the two cells could be discovered. The old cell wall remaining somewhat firm accounts for the neck of the zygo-